

Claims

The claimed invention is:

1. A method of identifying nonfunctional two-way radios from among a known group of two-way radios expected to be operating within a region, the method comprising:

for each of the two-way radios expected to be operating within the region, establishing a corresponding window of time;

for each of the established windows of time, awaiting a transmission from the corresponding radio;

if, for a particular radio, no transmission is detected within its corresponding window of time, recording the absence of the transmission; and

if, for a particular radio, the number of times absence of transmission has been recorded exceeds a threshold, identifying the particular radio as nonfunctional.

2. The method of claim 1, wherein the step of establishing a time window corresponding to each radio comprises:

for each of the two-way radios expected to be operating in the region, assigning a corresponding unique delay period;

broadcasting a query signal;

following the broadcast of the query signal, for each of the two-way radios, commencing the window of time corresponding to a particular radio, after waiting for the unique delay period assigned to the particular radio to elapse; and

for each of the two-way radios, closing its corresponding window of time, after waiting for a pre-defined period to elapse.

3. The method of claim 1, wherein the step of establishing a time window corresponding to each radio comprises:

transmitting a query signal containing a code identifying a particular radio;  
commencing the window of time corresponding to the particular radio, upon  
transmission of the query signal; and  
closing the window of time corresponding to the particular radio, after waiting  
for a pre-defined period of time to elapse.

4. The method of claim 1, wherein the step of establishing a time window  
corresponding to each radio comprises:

opening a window of time corresponding to all of the radios;  
waiting for a predefined period to elapse; and  
closing the window of time.

5. The method of claim 1, wherein the step of awaiting a transmission from  
a radio corresponding to a window of time comprises:

receiving transmissions on a carrier frequency assigned to the radio  
corresponding to the window of time; and

inspecting the received transmissions for presence of an identification code  
corresponding to the radio corresponding to the window of time.

6. The method of claim 5, wherein the identification code is a sinusoid of a  
pre-defined frequency.

7. The method of claim 5, wherein the identification code is a pre-defined  
binary signal.

8. The method of claim 1, further comprising:  
assigning a first frequency upon which all of the two-way radios are to receive  
transmissions;

assigning a second frequency upon which all of the two-way radios are to broadcast transmissions; and

assigning a unique identification code to each of the two-way radios.

9. The method of claim 1, further comprising:

upon identifying a particular radio as nonfunctional, issuing an alert.

10. The method of claim 9, wherein issuing an alert comprises presenting a message on a display screen.

11. The method of claim 1, further comprising:

upon identifying a particular radio as nonfunctional, contacting a repair service; and

identifying the nonfunctional radio to the repair service.

12. The method of claim 1, further comprising:

during an initialization sequence for a particular radio, receiving from the particular radio, a unique identification code to be embedded in the radio's awaited transmission during its corresponding window of time;

receiving a serial number identifying the particular radio; and

adding the particular radio's unique identification code and serial number to a list of two-way radios expected to be operating in the region.

13. The method of claim 12, wherein the serial number is printed on the particular two-way radio.

14. A two-way radio improved so as to render its operability observable, the two-way radio comprising:

an antenna for receiving and broadcasting transmissions;

a transceiver unit coupled to the antenna for modulating a carrier signal with a signal to be transmitted and for recovering a baseband signal from a received transmission;

a microprocessor coupled to the transceiver unit, the microprocessor programmed to command a broadcast of a transmission containing a code identifying the radio, at a designated point in time; and

wherein, prior to the broadcast of the transmission containing the identification code, a transmission protocol governing subsequent transmissions is known by the radio.

15. The two-way radio of claim 14, wherein the designated point in time for transmission of the identification code occurs in a power-up sequence of the radio.

16. The two-way radio of claim 14, wherein the designated point in time for transmission of the identification code occurs after a period of delay following a broadcast of a query signal.

17. The two-way radio of claim 14, wherein the designated point in time for transmission of the identification code occurs following a broadcast of a query signal containing the code identifying the radio.

18. The two-way radio of claim 14, wherein the transceiver unit transmits upon a first carrier frequency and receives signals modulated upon a second carrier frequency.

19. A wireless intercom system comprising:  
a first two-way radio fashioned as a headset;  
a second two-way radio fashioned as a headset; and  
a repeater unit;

wherein transmissions from the first and second two-way radio occur upon a first carrier frequency;

wherein the first and second two-way radios receive transmissions carried upon a second carrier frequency;

wherein the repeater unit receives transmission carried upon the first carrier frequency, and broadcasts transmissions upon the second carrier frequency, thereby enabling the first and second two-way radios to communicate;

wherein the repeater unit establishes a first window of time corresponding to the first radio and a second window of time corresponding to the second radio;

wherein, the repeater unit awaits a transmission from the first radio during the first window of time, and awaits a transmission from the second radio during the second window of time;

wherein, the repeater unit records absence of transmission from the first radio, if no transmission is received from the first radio during the first window of time;

wherein, the repeater unit records absence of transmission from the second radio, if no transmission is received from the second radio during the second window of time;

wherein, the repeater unit identifies the first radio as nonfunctional if the number of times absence of transmission by the first radio has been recorded exceeds a threshold; and

wherein, the repeater unit identifies the second radio as nonfunctional if the number of times absence of transmission by the second radio has been recorded exceeds a threshold.

20. The wireless intercom system of claim 19, wherein:

the repeater unit receives an alarm signal from an auxiliary device other than a two-way radio.

21. The wireless intercom system of claim 20, wherein the auxiliary device is a temperature sensor.

22. The wireless intercom system of claim 20, wherein the auxiliary device is a water sensor.

23. The wireless intercom system of claim 20, wherein the auxiliary device is a humidity sensor.

24. The wireless intercom system of claim 20, wherein the auxiliary device is an electrical current sensor.

25. The wireless intercom system of claim 20, wherein the repeater unit is configured to identify the auxiliary device as nonfunctional upon receiving the alarm signal.

26. The wireless intercom system of claim 25, wherein the repeater unit is configured to present a message on a display screen regarding the auxiliary device, upon the auxiliary device being identified as nonfunctional.

27. The wireless intercom system of claim 25, wherein the repeater unit communicates a request for service, upon identifying the auxiliary device as nonfunctional.

28. The wireless intercom system of claim 27, wherein:  
the repeater unit further comprises a modem; and  
wherein an electronic mail message requesting service is transmitted via the modem, upon identifying the auxiliary device as nonfunctional.

29. The wireless intercom system of claim 27, wherein:  
the repeater unit further comprises a modem; and  
wherein an alpha-numeric page requesting service is transmitted via the modem,  
upon identifying the auxiliary device as nonfunctional.

30. The wireless intercom system of claim 27, wherein:  
the repeater unit further comprises a modem; and  
a repair service is contacted via the modem, upon identifying the auxiliary  
device as nonfunctional.

31. The wireless intercom system of claim 20, wherein the repeater unit is  
programmed to execute the following steps:

assign a first delay period to the first radio and a second delay period to the  
second radio;  
broadcast a query signal to the first and second radios;  
open the first time window for the first radio after waiting the first delay period  
following the broadcast of the query signal;  
open the second time window for the second radio after waiting the second  
delay period following the broadcast of the query signal;  
close the first time window after waiting for a pre-defined period to elapse; and  
close the second time window after waiting for the pre-defined period of time to  
elapse.

32. The wireless intercom system of claim 20, wherein the repeater unit is  
programmed to execute the following steps:

transmit a first query signal containing a code identifying the first radio;  
open the first time window following the transmission of the first query signal;  
close the first time window after waiting for a pre-defined period to elapse;  
transmit a second query signal containing a code identifying the second radio;

open the second time window following the transmission of second first query signal; and

close the second time window after waiting for a pre-defined period to elapse.

33. The wireless intercom system of claim 20, wherein:  
the repeater unit includes a display; and  
wherein, upon identifying a radio as nonfunctional, a message identifying the nonfunctional radio is presented upon the display.

34. The wireless intercom system of claim 33, wherein:  
the repeater unit communicates a request for service upon identifying the auxiliary device as nonfunctional.